GeoPark Saves 6.23 Days off AFE With PowerDrive X6 vortexX RSS in Llanos Basin Drilling Campaign

Fit-for-purpose technology and optimized hole cleaning processes contribute to setting a field drilling record

CHALLENGE
Improve drilling efficiency on a high-displacement well without compromising the service quality and final cost of the well, despite known issues of low ROP because of bit balling, poor hole cleaning in high-angle wells, and formations with high dip angles.

SOLUTION
Use PowerDrive X6 vortexX* powered rotary steerable system (RSS) with a PowerPak* HR hard rubber motor and support drilling execution with ROPO* rate of penetration optimization software and annular pressure while drilling (APWD) for maximum efficiency.

RESULTS
- Achieved time savings of 37% over the plan.
- Drilled 29% faster than the fastest well in the drilling campaign.

Minimizing operating time for project economics
Improving the efficiency of E&P projects and reducing costs are priorities for achieving profitability. One of the most effective methods of reducing operational costs is lowering the rig cost, which is the biggest contributor to the well authorization for expenditure (AFE). This is done by enhancing drilling performance with the proper application of the latest technology and optimized processes.

This strategy was adopted by GeoPark in its Tua-10 well in Block 34 of Colombia’s Llanos basin. The operator had to overcome a number of known field issues, including low ROP due to bit balling, poor hole cleaning in high-angle wells, and poor BHA control in formations with high dip angles. The well was planned as a J-type well with a casing design that consisted of a 12¾-in and an 8 ½-in section. Including completion operations, the planned time in the AFE was 23 days, with 12.63 days authorized to drill the 8 ½-in section.

Developing fit-for-purpose solution in the planning stage
In the planning phase, GeoPark worked with Schlumberger to investigate technologies and processes that would overcome flat drilling times and improve drilling performance. Schlumberger recommended using the PowerDrive X6 vortexX RSS and PowerPak HR motor to drill the 8 ½-in section. Schlumberger also used ROPO software to monitor and adjust weight on bit and rpm in real time. GeoPark and Schlumberger also established hole-cleaning procedures, taking into account the high ROP possible with the PowerDrive X6 vortexX RSS. APWD data was acquired and analyzed to monitor hole cleaning and to minimize the wiper trips during execution.

The ROPO software aided in adjusting weight on bit and rpm.
CASE STUDY: Fit-for-purpose technology and enhanced hole cleaning help set field record, Llanos Basin, Colombia

Setting a drilling record with optimal technologies
The constant communication between GeoPark and Schlumberger resulted in excellent decisions when, after risk analysis, a planned trip with a BHA equipped with logging-while-drilling tools was eliminated. The Tua-10 well reached TD 6.23 days ahead of AFE and 29% faster compared with the previous well. To date, it is GeoPark’s fastest high-displacement well drilled in the Llanos 34 campaign using a powered RSS. The well also set a Schlumberger record for the longest single-run 8 ¾-in section drilled using the PowerDrive X6 vorteX RSS and PowerPak HR motor.

The Tua-10 well set a field record for drilling with a powered RSS. It was drilled to TD 6.23 drilling days ahead of AFE and 4.38 faster than the previously drilled well.